

U.S. Patent Application Serial No. 10/015,564
Amendment dated August 4, 2003
Reply to OA of April 11, 2003

IN THE SPECIFICATION:

Please amend the specification as follows:

Please amend the paragraph beginning on page 8, line 17, as follows:

- (A) methaxylylenediamine metaxylylenediamine or paraxylylenediamine.
- (B) polyfunctional compound having at least one acyl group which is capable of forming amide group moiety by reaction with a polyamine to form an oligomer.
- (C) monocarboxylic acid having 1 to 8 carbon atoms and/or derivative thereof.

Please amend the paragraph beginning on page 9, line 11, as follows:

- (A) methaxylylenediamine metaxylylenediamine or paraxylylenediamine.
- (B) polyfunctional compound having at least one acyl group which is capable of forming amide group moiety by reaction with a polyamine to form an oligomer.
- (C) monocarboxylic acid having 1 to 8 carbon atoms and/or derivative thereof.

Please amend the paragraph beginning on page 10, line 4, as follows:

- (A) methaxylylenediamine metaxylylenediamine or paraxylylenediamine.
- (B) polyfunctional compound having at least one acyl group which is capable of forming amide group moiety by reaction with a polyamine to form an oligomer.
- (C) monocarboxylic acid having 1 to 8 carbon atoms and/or derivative thereof.

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Please amend the paragraph beginning on page 11, line 1, as follows:

Examples of preferable epoxy resin include is at least one resin selected from the group consisting of an epoxy resin with glycidylamine moiety derived from methaxylyenediamine metaxylyenediamine, an epoxy resin with glycidylamine moiety derived from 1,3-bis(aminomethyl) cyclohexane, an epoxy resin with glycidylamine moiety derived from diaminodiphenyl methane, an epoxy resin with glycidylamine moiety derived from paraamino phenol, an epoxy resin with glycidylether moiety derived from bisphenol A, an epoxy resin with glycidylether moiety derived from bisphenol F, an epoxy resin with glycidylether moiety derived from phenol novolac and an epoxy resin with glycidylether moiety derived from resorcinol.

Please amend the paragraph beginning on page 11, line 15, as follows:

Among them, an epoxy resin with glycidylamine moiety derived from methaxylyenediamine metaxylyenediamine is particulary more preferable. The epoxy resin with glycidylamine moiety derived from methaxylyenediamine metaxylyenediamine can be obtained by reaction to add epichlorohydrin to methaxylyenediamine metaxylyenediamine. The above-mentioned glycidylamine moiety includes mono-, di-, tri- and/or tetra-glycidylamine moiety which can be substitute for four hydrogen atoms of diamine in methaxylyenediamine metaxylyenediamine. Each ratio of mono-, di-, tri- and/or tetra-glycidylamine can be changed by reaction ratio of epichlorohydrin to methaxylyenediamine metaxylyenediamine. For example, when about 4 times by mol of epichlorohydrin to 1 mol of methaxylyenediamine metaxylyenediamine is added, an

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Concl
epoxy resin with tetraglycidylamine moiety.

Please amend the paragraph beginning on page 13, line 11, as follows:

(A) methaxylylenediamine metaxylylenediamine or paraxylylenediamine.

(B) polyfunctional compound having at least one acyl group which is capable of forming amide group moiety by reaction with a polyamine to form an oligomer (hereinafter, "(B) polyfunctional compound").

(C) monocarboxylic acid having 1 to 8 carbon atoms and/or derivative thereof.

Please amend the paragraph beginning on page 14, line 3, as follows:

Regarding the reaction of (A) methaxylylenediamine metaxylylenediamine or paraxylylenediamine and (B) a polyfunctional compound in the amine curing agent of the present invention, (hereinafter, "the reaction of (A) and (B)"), when carboxylic acid, an ester thereof or an amide thereof is used as (B) polyfunctional compound, the reaction of (A) and (B) is performed by mixing (A) methaxylylenediamine metaxylylenediamine or paraxylylenediamine and (B) polyfunctional compound at a temperature of 0 to 100 °C and then conducting amide group formation reaction due to dehydration, dealcoholization and deamination at a temperature of 100 to 300 °C and preferably 130 to 250 °C.

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Please amend the paragraph beginning on page 36, line 16, as follows:

A MFG solution containing 33 parts by weight of amine curing agent A and 50 parts by weight of an epoxy resin with tetraglycidylamine moiety derived from methaxylylenediamine metaxylylenediamine, manufactured by Mitsubishi Gas Chemical Co., Inc., TETRAD-X was prepared and 0.02 parts by weight of an acrylic wetting agent, manufactured by Big•Chemi Co., BYK381 was added thereto and stirring was sufficiently performed, whereby a coating solution was prepared. The coating solution thus obtained was coated on each base material and curing reaction was performed at 60 °C for one hour and then further at 120 °C for 30 minutes, whereby coating films were prepared on each base material. Various performances for the coated films thus obtained were evaluated. The evaluation results were shown in Tables 1 and 2.

Please amend the paragraph beginning on page 45, line 10, as follows:

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A methanol/ethyl acetate=1/1 solution (solid matter concentration; 30 % by weight) containing 90 parts by weight of amine curing agent G and 50 parts by weight of an epoxy resin with tetraglycidylamine derived from methaxylylenediamine metaxylylenediamine, manufactured by Mitsubishi Gas Chemical Co., Inc., TETRAD-X was prepared and 0.02 parts by weight of an acrylic wetting agent, manufactured by Big•Chemi Co., BYK381 was added thereto and stirring was sufficiently performed, whereby a coating solution was prepared. The coating solution thus obtained was coated on a stretched polypropylene film of thickness 20 μm , manufactured by Toyobo k.k., in Japan, Pylene with bar coder No.6 and curing was performed at 60 °C for one hour, whereby a

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Amend
coated film was obtained. The thickness of the gas barrier layer was about 3 μm . Gas barrier property and interlayer adhesiveness of the coated film thus obtained were evaluated. The evaluation results were shown in Table 3.

Please amend the paragraph beginning on page 47, line 14, as follows:

Amend
The coated film was prepared and evaluated in the same manner as in Example 8 except that 50 parts by weight of an epoxy resin with diglycidylether moiety derived from bisphenol F, manufactured by Yuka Shell Epoxy k.k., in Japan, Epicoat 807 instead of the epoxy resin with tetraglycidylamine derived from methaxylylenediamine metaxylylenediamine and 77 parts by weight of amine curing agent G were used. The evaluation results were shown in Table 3.

Amend
Please amend the paragraph beginning on page 48, line 2 as follows:

Amend
The coated film was prepared and evaluated in the same manner as in Example 8 except that 50 parts by weight of an epoxy resin with diglycidylether moiety derived from bisphenol A, manufactured by Yuka Shell Epoxy k.k., in Japan, Epicoat 828 instead of the epoxy resin with tetraglycidylamine derived from methaxylylenediamine metaxylylenediamine and 27 parts by weight of amine curing agent K were used instead of amine curing agent G. The evaluation results were shown in Table 3.

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Please amend the paragraph beginning on page 49, line 11, as follows:

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A methanol/ethyl acetate=1/1 solution (solid matter concentration; 30 % by weight) containing 90 parts by weight of amine curing agent G and 50 parts by weight of an epoxy resin with tetraglycidylamine derived from methaxylylenediamine metaxylylenediamine, manufactured by Mitsubishi Gas Chemical Co., Inc., TETRAD-X was prepared and 0.02 parts by weight of an acrylic wetting agent, manufactured by Big•Chemi Co., BYK281 was added thereto and stirring was sufficiently performed, whereby a coating solution was prepared. The coating solution thus obtained was coated (coating amount: 3 g/m² (solid matter)) on a stretched polypropylene film of thickness 20 μ m, manufactured by Toyobo k.k., in Japan, Pylene with bar coder No. 3 and dried at 80 °C for 30 seconds and then adhered to a linear low density polyethylene film of thickness of 40 μ m, manufactured by Toyobo k.k., Ricks with a nip roller and aging was performed at 35 °C for one day, whereby a laminate was obtained. Gas barrier property and interlayer adhesiveness of the laminate thus obtained were evaluated. The evaluation results were shown in Table 5.

Please amend the paragraph beginning on page 52, line 15, as follows:

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The laminate was prepared and evaluated in the same manner as in Example 15 except that 50 parts by weight of an epoxy resin with diglycidylether moiety derived from bisphenol A, manufactured by Yuka Shell Epoxy k.k., in Japan, Epicoat 828 instead of the epoxy resin tetraglycidyl moiety derived from methaxylylenediamine metaxylylenediamine and 27 parts by weight of amine curing agent J was used instead of amine curing agent G. The evaluation results were shown in Table 5.